

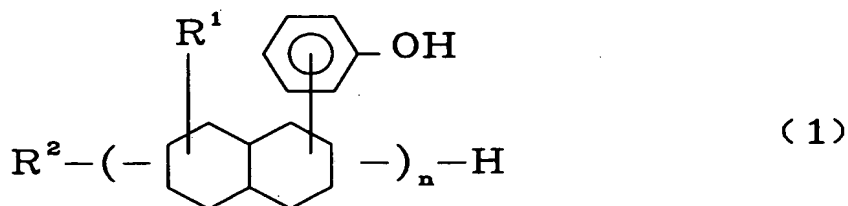
# CLAIMS

[1] A thermosetting resin composition characterized as containing an epoxy resin having an epoxy equivalent weight of 100 - 2,000, an epoxy hardener in the form of a compound having a phenol group, and a layered silicate in the amount of 0.2 - 100 parts by weight, based on 100 parts by weight of resin constituents including said epoxy resin and epoxy hardener.

[2] The thermosetting resin composition as recited in claim 1, characterized in that said epoxy resin contains at least one type selected from the group consisting of a bisphenol epoxy resin, biphenyl epoxy resin, dicyclopentadiene epoxy resin and naphthalene epoxy resin.

[3] The thermosetting resin composition as recited in claim 1 or 2, characterized in that said epoxy hardener comprises at least one type selected from the group consisting of hydrophobic phenol compounds represented by the following formulas (1) - (3):

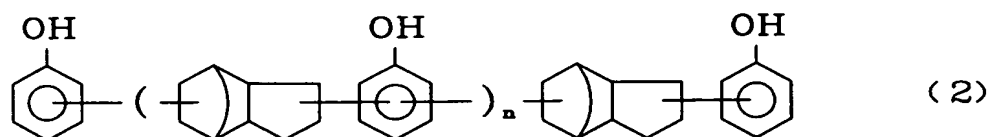
[Chemical 1]



(In the formula (1),  $R^1$  denotes methyl or ethyl,  $R^2$  denotes hydrogen or a hydrocarbon group and  $n$  indicates an integer of

2 - 4)

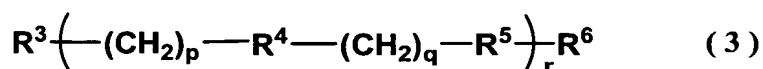
[Chemical 2]



(In the formula (2), n indicates 0 or an integer of 1 -

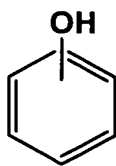
5) and

[Chemical 3]

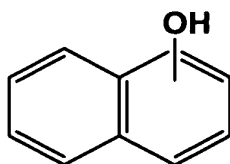


(In the formula (3),  $R^3$  denotes a group represented by the following formula (4a) or (4b),  $R^4$  denotes a group represented by the following formula (5a), (5b) or (5c),  $R^5$  denotes a group represented by the following formula (6a) or (6b),  $R^6$  denotes hydrogen or a molecular chain group containing 1 - 20 carbon atoms, p and q independently indicate an integer of 1 - 6, and r indicates an integer of 1 - 11).

15 [Chemical 4]

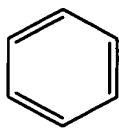


(4a)

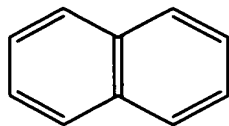


(4b)

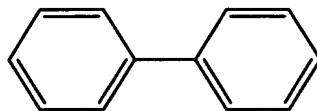
[Chemical 5]



( 5a )

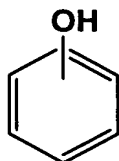


( 5b )

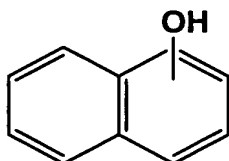


( 5c )

[Chemical 6]



( 6a )



( 6b )

[4] The thermosetting resin composition as recited in any one  
 5 of claims 1 - 3, characterized in that said layered silicate  
 comprises at least one type selected from the group consisting  
 of montmorillonite, hectorite, swelling mica and vermiculite.

[5] The thermosetting resin composition as recited in any one  
 of claims 1 - 4, characterized in that said layered silicate  
 10 contains at least one type of ammonium salt selected from the  
 group consisting of alkyl ammonium salt containing 6 or more  
 carbon atoms, aromatic quaternary ammonium salt and heterocyclic  
 quaternary ammonium salt.

[6] A resin sheet characterized as comprising the  
 15 thermosetting resin composition as recited in any one of claims  
 1 - 5.

[7] A resin sheet characterized in that it is obtained by curing  
 the resin sheet as recited in claim 6.

[8] The resin sheet as recited in claim 6 or 7, characterized  
 20 in that a part or all of said layered silicate is dispersed in

the form of a stack consisting of 5 or less layers and has a mean interlayer spacing of at least 3 nm along the (001) plane when measured by a wide-angle X-ray diffraction method.

[9] The resin sheet as recited in any one of claims 6 - 8,  
5 characterized in that it exhibits a mean linear expansion coefficient ( $\alpha_1$ ) of not exceeding  $4.0 \times 10^{-5} / ^\circ\text{C}$  over a temperature range that is 10 - 50  $^\circ\text{C}$  lower than a glass transition temperature of a cured product of said thermosetting resin composition.

[10] The resin sheet as recited in any one of claims 6 - 9,  
10 characterized in that it exhibits a mean linear expansion coefficient ( $\alpha_2$ ) of not exceeding  $4.0 \times 10^{-5} / ^\circ\text{C}$  over a temperature range that is 10 - 50  $^\circ\text{C}$  higher than a glass transition temperature of a cured product of said thermosetting resin composition.

[11] The resin sheet as recited in any one of claims 6 - 10,  
15 characterized in that a cured product of said thermosetting resin composition exhibits a dielectric constant at 1 GHz of not exceeding 3.3 and a dielectric loss tangent at 1 GHz of not exceeding 0.015.

[12] A resin sheet for insulating substrate, characterized as  
20 comprising the resin sheet as recited in any one of claims 6 - 11.